

-	4	((rhamnose and (cation near "3" exchange)) and weak) and finex	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:03
-	484	(weak weakly) adj cation	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:04
-	0	((weak weakly) adj cation) same rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:04
-	10	((weak weakly) adj cation) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 12:08
-	111	((weak weakly) adj cation) and sugar	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	131	sequential same continuous same bed	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	30	(sequential same continuous same bed) same moving	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/25 15:49
-	2	"20010009136"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:24
-	2	"20010009236"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:25
-	0	"20010009236" and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:24
-	1	"20010009236" and (xylose rhamnose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:26
-	1	"20030006191"	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 11:27
-	1	"20030006191" and (xylose rhamnose weak weakly)\	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:50
-	1553	(monosaccharide saccharide) same chromatograph\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:51

L Number	Hits	Search Text	DB	Time stamp
1	842	127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:37
2	14	(127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:37
3	3	((127/46.2.ccls. 127/46.3.ccls. 127/46.1.ccls.) and rhamnose) and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:39
4	1043151	536/("124" "127" "128" 1.1)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:40
5	2	536/("124" "127" "128" 1.1).ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:40
6	1886	536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:41
7	117	(536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:41
8	25	((536/124.ccls. 536/127.ccls. 536/128.ccls. 536/1.1.ccls.) and rhamnose) and (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:44
9	1221	210/663.ccls. 210/660.ccls. 210/661.ccls.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:44
10	3	(210/663.ccls. 210/660.ccls. 210/661.ccls.) and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/28 12:45
-	2	5998637.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/26 11:23
-	2	5998607.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/24 14:25
-	1404	rhamnose and (cation near "3" exchange)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/25 11:54
-	400	(rhamnose and (cation near "3" exchange)) and weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB	2003/03/25 11:54

-	20	((monosaccharide saccharide) same chromatograph\$) same (weak weakly)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:59
-	17306	hplc same ph	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 12:59
-	17306	hplc same ph	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 13:00
-	81	(hplc same ph) same weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 13:01
-	9	((hplc same ph) same weak) and (weak adj acid)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:47
-	0	hplc same (rhamanose and xylose and arabinose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weak	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weakly	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	0	(hplc same (rhamanose xylose arabinose)) same weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:48
-	151	hplc same (rhamanose xylose arabinose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:50
-	44	(hplc same (rhamanose xylose arabinose)) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 14:52
-	29	(hplc same (rhamanose xylose arabinose)) and (amberlite finex)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:06
-	1065	(weak near 6045593.PN. acid) and hplc and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:11
-	364	((weak near 6045593.PN. acid) and hplc and rhamnose) and cation	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:07

-	18	((weak near 6045593.PN. acid) and hplc and rhamnose) and cation) and divinyl	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:08
-	28	(weak near3 acid) and hplc and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:38
-	2	5466294.pn.	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:50
-	807	chromatography and cation and rhamnose	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:51
-	390	(chromatography and cation and rhamnose) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 15:52
-	43	(chromatography and cation and rhamnose) and (weak adj acid)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:41
-	22	hplc same (rhamnose and xylose)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:43
-	10	(hplc same (rhamnose and xylose)) and weak\$	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM TDB	2003/03/26 16:43

Material Safety Data Sheet

Printing date 09/10/2002

Reviewed on 09/10/2002

1 Identification of substance:

- Product details:
- Trade name: Aminex HPX-87P Column
- Catalog or product number: 1250098
- Application of the substance / the preparation Laboratory chemicals
- Manufacturer/Supplier:
Bio-Rad Laboratories, Life Science Group
2000 Alfred Nobel Drive
Hercules, California 94547
1(510)741-1000
- Information department: Technical services, customer support.
- Emergency information:
1(800)424-9300 Use only in the event of a CHEMICAL EMERGENCY
involving a SPILL, LEAK, FIRE, EXPLOSION or ACCIDENT.
510-741-1000

2 Composition/Information on components:

- Chemical characterization:
CAS No. Description:

69011-20-7 Polystyrene-divinylbenzene sulfonic acid resin

- Identification number(s):
- EU Number: 585-580-01-X

- Chemical characterization

Listing of dangerous and non-hazardous components:

69011-20-7 Polystyrene-divinylbenzene sulfonic acid resin 50-100 %

7732-18-5 water 35-50 %

EINECS: 231-791-2
RTECS: ZC 0110000

3 Hazards identification

- Information pertaining to particular dangers for man and

environment

- not applicable
- **NFPA ratings (scale 0-4)**
Health = 0
Fire = 0
Reactivity = 0

4 First aid measures

- **After inhalation**
Supply fresh air; consult doctor in case of complaints.
- **After skin contact** Generally the product does not irritate the skin.
- **After eye contact**
Rinse opened eye for several minutes under running water.
- **After swallowing** Induce vomiting and call for medical help.

5 Fire fighting measures

- **Suitable extinguishing agents**
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** No special measures required.

6 Accidental release measures

- **Person-related safety precautions:** Not required
- **Measures for environmental protection:** No special measures required.
- **Measures for cleaning/collecting:** Pick up mechanically.

7 Handling and storage

- **Handling**
- **Information for safe handling:**
No special measures required.
Prevent formation of dust.
No special precautions are necessary if used correctly.
- **Information about protection against explosions and fires:**
No special measures required.
- **Storage**
- **Requirements to be met by storerooms and receptacles:**
No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** None.
- **Storage class**
- **Class according to regulation on flammable liquids:** Void

8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
No further data; see item 7.

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

- **Additional information:**
The lists that were valid during the creation were used as basis.
- **Personal protective equipment**
- **General protective and hygienic measures**
Wash hands before breaks and at the end of work.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**
Protective gloves.
Synthetic gloves
- **Material of gloves** Synthetic gloves
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:** Not required.

9 Physical and chemical properties:

- **General Information**

- **Form:** particulate
- **Color:** Light yellow
- **Odor:** Odorless

	<u>Value/Range</u>	<u>Unit</u>	<u>Method</u>
◦			
◦ Change in condition			
◦ Melting point/Melting range:	undetermined		
◦ Boiling point/Boiling range:	undetermined		
◦ Flash point:	Not applicable		
◦ Flammability (solid, gaseous)	Product is not flammable.		
◦ Danger of explosion: Explosive when mixed with oxidizing substances.			
◦ Density:	Not determined		
◦ Solubility in / Miscibility with			

- **Water:** Insoluble
- **Solvent content:**
- **Organic solvents:** 0.0 %
- **Solids content:** 100.0 %

10 Stability and reactivity

- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **Dangerous reactions** Reacts with strong oxidizing agents
- **Dangerous products of decomposition:**
No dangerous decomposition products known

11 Toxicological information

- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** No irritant effect.
- **on the eye:** No irritant effect.
- **Sensitization:** No sensitizing effects known.

12 Ecological information:

- **General notes:** Not known to be hazardous to water.

13 Disposal considerations

- **Product:**
- **Recommendation**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Hand over to hazardous waste disposers.
- **Uncleaned packagings:**
- **Recommendation:**
Disposal must be made according to official regulations.

14 Transport information

- **Land transport ADR/RID (cross-border)**
- **ADR/RID class:** -
- **Maritime transport IMDG:**
- **Marine pollutant:** No

15 Regulations

- **SARA (Superfund Amendments and Reauthorization Act of 1986 - USA)**
Section 302/304 (40CFR355.30 / 40CFR355.40):

None of the ingredients is listed.

Section 313 (40CFR372.65):

None of the ingredients is listed.

TSCA (Toxic Substances Control Act):

7732-18-5 water

- **California Proposition 65:**
Chemicals known to cause cancer:

The product does not contain listed components.

Chemicals known to cause reproductive toxicity:

The product does not contain listed components.

- **Carcinogenicity categories**
EPA (Environmental Protection Agency)

None of the ingredients is listed.

IARC (International Agency for Research on Cancer)

None of the ingredients is listed.

NTP (National Toxicology Program)

None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)

None of the ingredients is listed.

MAK (German Maximum Workplace Concentration)

None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

- **Markings according to EU guidelines:**
The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials
- **National regulations**
- **Classification according to VbF: Void**

16 Other information:

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Department issuing MSDS:** Environmental Health and Safety.

- **Contact:**

Life Science Group, Environmental Health and Safety, 2000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 741-1000

Diagnostic Group, Environmental Health and Safety, 4000 Alfred Nobel Drive, Hercules, California, 94547: 1(510) 724-7000